IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

MARK YAMAZAKI et al.

Serial No.: 10/711,499

Filed: September 22, 2004

Group Art Unit: 2838

Examiner: Aaron C. Piggush

For: METHOD FOR CONTROLLING CHARGING OF A POWER SOURCE OF A HYBRID VEHICLE

Attorney Docket No.: 81102778 (FMC 1781 PUS)

THIRD APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Sir:

This is an Appeal Brief from the rejection of claims 1-20 in the Office Action mailed on November 26, 2008 for the above-identified patent application.

I. REAL PARTY IN INTEREST

The real party in interest is Ford Global Technologies, LLC ("Assignee"), a limited liability corporation organized and existing under the laws of the state of Michigan, and having a place of business at One Parklane Boulevard, Suite 600, Parklane Towers East, Dearborn, Michigan 48126, as set forth in the assignment recorded in the U.S. Patent and Trademark Office on September 22, 2004 at Reel 015158 / Frame 0862.

II. RELATED APPEALS AND INTERFERENCES

Applicants previously filed an Appeal Brief on February 5, 2008, which resulted in the reopening of prosecution in the communication mailed on April 30, 2008. In response, Applicants filed a second appeal brief on August 21, 2008, which resulted in the reopening of prosecution in the communication mailed on November 26, 2008. This appeal brief is in response to the November 26, 2008 communication. There are no other appeals or interferences known to the Appellant, the Appellant's legal representative, or the Assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-20 are pending in this application. Claims 1-20 were rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

All amendments previously filed in this application have been entered. No amendment was filed after the Office Action dated November 26, 2008.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to a method of controlling charging of a power source of a hybrid vehicle. The hybrid vehicle (10) has a set of power sources, including a primary power source (18) and at least one secondary power source (20), and an electrical machine (22) adapted to be driven by at least one member of the set of power sources. The method includes the steps of determining a maximum output torque level ($Torque_{MAX}$) of the primary power source (104), determining a state of charge of the secondary power source (108, 110), determining a charge torque modifier value ($Torque_{MOD}$) based on the maximum output torque level and the state of charge (108), determining a target torque level for the electrical machine based on the charge torque modifier value (118), and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source (120). (See claim 1, Figures 1 and 2A, and paragraphs 0023-0030 and 0039-0053.)

Another expression of the invention also relates to a method for controlling charging of a power source of a hybrid electric vehicle. The hybrid electric vehicle (10) includes a power source (20), an engine (18), and an electrical machine (22) selectively coupled to the engine and adapted to charge the power source. The method comprises the steps of determining whether the engine is running (100), determining whether the electrical machine is being driven by the engine and is charging the power source (100), determining a maximum output torque level ($Torque_{MAX}$) of the engine (104), comparing a state of charge of the power source to a threshold value (110), selecting an adjustment value based on an amount of torque available to charge the power source (112, 114), calculating a charge torque modifier value ($Torque_{MOD}$) based on the adjustment value (116), determining a target torque level for the electrical machine based on the charge torque modifier value (118), and driving the electrical machine at the target torque level with the engine to charge the power source (120). The charge torque modifier value is a constant when the state of charge is less than the threshold value and decreases as the state of charge increases when the state of charge is greater than the threshold value. (See claim 13, Figures 1-4, and paragraphs 0023-0030 and 0038-0053.)

Another expression of the invention also relates to a method for controlling charging of a power source of a hybrid electric vehicle. The hybrid electric vehicle (10) comprises a primary power source (18), a secondary power source (20), an electrical machine (22) adapted to be driven by the primary or secondary power sources, and an accelerator pedal. The method comprises the steps of determining a maximum output torque level ($Torque_{MAX}$) of the primary power source (104), determining a state of charge of the secondary power source (110), comparing the state of charge to a threshold value (110), selecting an adjustment value (112, 114), determining a charge torque modifier value ($Torque_{MOD}$) based on the adjustment value and an actual output torque of the primary power source expressed as a percentage of the maximum output torque level (106, 108, 116), determining a target torque level for the electrical machine based on the charge torque modifier value (118), and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source (120). The target torque level decreases linearly as the output torque of the primary power source

increases to provide a consistent level of vehicle acceleration as the accelerator pedal is actuated when the state of charge exceeds a threshold value (Figure 3). (See claim 17, Figures 1-4, and paragraphs 0023-0030 and 0038-0062.)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,960,152 issued to Aoki et al. in view of U.S. Patent No. 5,873,801 issued to Taga et al.

VII. ARGUMENT

A. Claims 1-20 Are Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

Claims 1-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,960,152 issued to Aoki et al. (hereinafter "Aoki '152") in view of U.S. Patent No. 5,873,801 issued to Taga et al. (hereinafter "Taga '801"). M.P.E.P. § 2143 provides that "[t]he rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art." *KSR International Co. v. Teleflex*, 550 U.S. at ___, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950). "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 550 U.S. at ____, 82 USPQ2d at 1396. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

Claim 1 recites a method of controlling charging of a power source of a hybrid vehicle. The hybrid vehicle comprises a set of power sources including a primary power source and at least one secondary power source, and an electrical machine adapted to be driven by at least one member of the set of power sources. The method includes the steps of determining a maximum output torque level of the primary power source, determining a state of charge of the secondary power source, determining a charge torque modifier value based on the maximum output torque level and the state of charge, determining a target torque level for the electrical machine based on the charge torque modifier value, and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source.

At the outset, Applicants note that the Examiner did not point with particularity to any portion of Aoki '152 or Taga '801 as being a charge torque modifier value or a target torque level as recited in claim 1. Rather, the Examiner generically referenced multiple paragraphs of Aoki '152 without identifying specific claim elements. For example, there are 31 different variables and operation states recited in column 11, lines 15-64, which is just one of the passages that the Examiner cited in reference to a charge torque modifier value as well as other claim elements (see page 3 of the Office Action dated November 26, 2008, hereinafter referred to as "Office Action"). These omissions leave questions as to how limitations in the claims correspond to features in the prior art. Applicants therefore invoke the requirements of MPEP §1207.02, which requires that the Examiner's Answer point out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon in the rejection.

A *prima facie* case has not been established for the rejection of claim 1 and its dependent claims for the following reasons.

First, Aoki '152 and Taga '801, either alone on in combination, do not disclose or suggest "determining a state of charge of the secondary power source" in relation to controlling charging a power source of a hybrid vehicle. In the Office Action, the Examiner pointed to column 8, lines 35-38 of Aoki '152 as the sole basis of support for this claim limitation (see

Office Action, page 3). Column 8, lines 35-38 discloses "a battery remaining charge SOC" but does not employ it in the claimed context of controlling charging of a power source. Instead, Aoki '152 discloses that battery remaining charge is ultimately used as an input in calculating a vehicle requirement output PO, which is used to determine an operation point of an engine along "curve L where the engine 11 reaches maximum engine efficiency" (see column 11, lines 23-28 and 32-43). Thus, Aoki '152 relates battery remaining charge to engine efficiency, not to controlling charging of any power source.

Second, Aoki '152 and Taga '801 do not disclose or suggest "determining a charge torque modifier value based on the maximum output torque level and the state of charge." Indeed, Aoki '152 is silent regarding this claim limitation. Moreover, the multiple portions of Aoki '152 referenced by the Examiner on page 3 of the Office Action do not disclose or remotely suggest this claim limitation or any relationship to the controlling charging of any power source. The first passage cited by the Examiner (column 2, lines 19-36 of Aoki '152) discloses "a motor that compensates for an excessive or a deficient amount of engine torque" but does not disclose or suggest any value, let alone a charge torque modifier value, that is based on a maximum output torque level [of a primary power source] and a state of charge [of a secondary power source]. The second passage cited by the Examiner (column 11, lines 15-64 of Aoki '152) discloses "calculating a vehicle requirement output PO" by "adding the driver requirement output PD and the battery charge/discharge requirement output PB" (column 11, lines 27-30). None of these outputs (i.e., PO, PD and PB) is based on a maximum output torque level and a state of charge as claimed. Instead, the driver requirement output PD is calculated by "multiplying the vehicle requirement torque TO*" that is "preset to correspond with the accelerator pedal position AP, the brake pedal position BP, and the vehicle speed V" by "the vehicle speed V" (see column 10, lines 56-59 and column 11, lines 11-12). The battery charge/discharge requirement output PB is "based on the battery remaining charge SOC" (column 11, lines 19-22) but is not based on or related to a maximum output torque level. The third passage cited by the Examiner (column 22, lines 39-59 of Aoki '152) discloses engine target torque TE*, engine torque TE, vehicle requirement torque TO*, and drive motor torque TM; however, there is no disclosure of a

maximum output torque level, a state of charge, or any determination based thereon. The fourth passage cited by the Examiner (column 24, lines 38-55 of Aoki '152) discloses a drive motor target torque TM*, engine torque TE, and vehicle requirement torque TO*; however, there is no disclosure or suggestion of any relationship to a maximum output torque level, a state of charge, or any determination based thereon. In other words, the words "torque" and "charge" may be found in the passages cited by the Examiner, but none of the cited passages discloses or suggests any value that is based on a maximum output torque level of a primary power source and a state of charge of at least one secondary power source as claimed. Taga '801 fails to cure the deficiencies of Aoki '152 since it does not disclose or suggest any relationship between a maximum output torque level of a primary power source and a charge torque modifier value. Instead, Taga '801 merely discloses that a "maximum torque command value Tmax is then computed at step S110 by taking into account that pulsation of torque (torque ripple) output from the engine 50 to the crankshaft 56, when the engine 50 is driven at the driving point of the target engine torque Te* and the target engine speed Ne*" (see column 13, line 66 through column 14, line 3). The maximum torque command value "represents the maximum torque ripple" of the engine (column 14, lines 11-12). The current of a clutch motor 30 is set "to enable a torque equal to or greater than a maximum torque ripple of the engine (50) to be applied from the clutch motor (30) to a drive shaft (22) and the crankshaft (56)" to enable "the torque and rotation of the engine (50) to be directly transmitted to the drive shaft (22) at a high efficiency" (see Abstract). In other words, Taga '801 relates the maximum torque command value to the control and efficiency of a clutch motor and not to the control or efficiency of the engine or primary power source. In summary, Aoki '152 and Taga '801 do not disclose or suggest the determination of any value that is based on the maximum output torque level of a primary power source and the state of charge of a secondary power source as recited in claim 1.

Third, since there is no disclosure or suggestion of a charge torque modifier value that is based on the maximum output torque level of a primary power source and the state of charge of a secondary power source as discussed above, it logically follows that Aoki '152 and Taga '801 cannot logically disclose or suggest "determining a target torque level for the electrical

machine based on the charge torque modifier value" or "driving the electrical machine at the target torque level with the primary power source to charge the secondary power source" as recited in claim 1. Moreover, the passages cited by the Examiner simply do not disclose or remotely suggest these claim limitations.

Fourth, in response to the Examiner's argument addressing Aoki '152 alone found on page 7 of the Office Action, Aoki '152 does not disclose or suggest "determining a maximum output torque level of the primary power source." The Examiner pointed to Figure 12 for support in the current Office Action (see Office Action page 7). In the previous Office Action dated April 30, 2008, the Examiner also pointed to column 11, lines 32-49, column 22, lines 29-47 of Aoki '152 for support (see Office Action dated April 30, 2008, page 3). Column 11, lines 32-49 discloses "engine torque TE1 to TE3" but does not disclose or suggest that any of these values are maximum output torque levels. Indeed, TE1-TE3 are merely engine torque values that correspond to "engine rotational speeds NE1 to NE3" (see column 11 lines 43-46). Similarly, Figure 12 does not disclose or suggest a maximum output torque level. Instead, Figure 12 merely illustrates "an engine target operation state map" (see column 10, line 26). This map includes "curve L where the engine 11 reaches maximum engine efficiency" (column 22, lines 29-47). Maximum engine efficiency is not maximum output torque. In summary, Aoki '152 does not disclose or suggest any value that is a maximum output torque level as recited in claim 1.

In summary, Aoki '152 and Taga '801 do not disclose or suggest the combination of method steps as recited in claim 1. Thus, a *prima facie* case has not been established and the rejection of claim 1 must be withdrawn. Since claims 2-12 depend on claim 1, the rejection of these claims must be withdrawn for the same reasons.

A *prima facie* case has not been established for the rejection of claim 13. Claim 13 recites a method of controlling charging of a power source of a hybrid vehicle. The method comprises "determining whether the engine is running; determining whether the electrical machine is being driven by the engine and is charging the power source; determining a maximum

output torque level of the engine; comparing a state of charge of the power source to a threshold value; selecting an adjustment value based on an amount of torque available to charge the power source; calculating a charge torque modifier value based on the adjustment value; determining a target torque level for the electrical machine based on the charge torque modifier value; and driving the electrical machine at the target torque level with the engine to charge the power source; wherein the charge torque modifier value is a constant if the state of charge is less than the threshold value and the charge torque modifier value decreases as the state of charge increases if the state of charge is greater than the threshold value."

At the outset, Applicants note that the Examiner did not point with particularity to any portion of Aoki '152 or Taga '801 as being a threshold value, an adjustment value, a charge torque modifier value, or a target torque level as recited in claim 13. Rather, the Examiner generically referenced multiple paragraphs of Aoki '152 and its figures without identifying specific claim elements. These omissions leave questions as to how limitations in the claims correspond to features in the prior art. Applicants therefore invoke the requirements of MPEP §1207.02, which requires that the Examiner's Answer point out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon in the rejection.

In the Office Action, the Examiner merely referenced the arguments presented for claims 1-7 to support for the rejection of claim 13 (see Office Action, page 6). Therefore, the arguments presented above are also applicable to any identical limitations in claim 13.

In addition, claim 13 contains many limitations that are not recited in claims 1-7 and were not properly addressed by the Examiner in the Office Action. For example, claims 1-7 do not recite the specific claim limitations of "selecting an adjustment value based on an amount of torque available to charge the power source" or "calculating a charge torque modifier value based on the adjustment value" or that "the charge torque modifier value is a constant if the state of charge is less than the threshold value and the charge torque modifier value decreases as the state of charge increases if the state of charge is greater than the threshold value." Moreover, the

Examiner has presented no arguments drawn to these specific claim limitations. The Court of Appeals for the Federal Circuit has made it clear that such silence cannot establish a *prima facie* rejection:

> The process of patent examination is an interactive one. See generally, Chisum, *Patents*, § 11.03 *et seq.* (1992). The examiner cannot sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the examiner. The 'prima facie case' notion, the exact origin of which appears obscure (see *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984)), seemingly was intended to leave no doubt among examiners that they must state clearly and specifically any objections (the prima facie case) to patentability, and give the applicant fair opportunity to meet those objections with evidence and argument. To that extent the concept serves to level the playing field and reduces the likelihood of administrative arbitrariness. *In re Oetiker*, 977 F.2d 1443, 1449 (Fed. Cir. 1992).

The Examiner has not provided the Applicants with the specific grounds for rejection under 35 U.S.C. § 103(a). No reference or analysis can be found in the Office Action which applies any such teachings of Aoki '152, Taga '801, or the other art of record to the specific combination of claim limitations recited in claim 13. Thus, the rejection of claim 13 is improper and must be withdrawn. Since claims 14-16 depend on claim 13, the rejection of these claims must be withdrawn for the same reasons.

A *prima facie* case has not been established for the rejection of claim 17. Claim 17 recites a method of controlling charging of a power source of a hybrid electric vehicle. The method comprises "determining a maximum output torque level of the primary power source; determining a state of charge of the secondary power source; comparing the state of charge to a

threshold value; selecting an adjustment value; determining a charge torque modifier value based on the adjustment value and an actual output torque of the primary power source expressed as a percentage of the maximum output torque level; determining a target torque level for the electrical machine based on the charge torque modifier value; and driving the electrical machine at the target torque level with the primary power source to charge the secondary power source; wherein when the state of charge exceeds a threshold value the target torque level decreases linearly as the output torque of the primary power source increases to provide a consistent level of vehicle acceleration as the accelerator pedal is actuated."

Aoki '152 and Taga '801, either alone or in combination, do not disclose or remotely suggest a method of controlling charging of a power source of a hybrid electric vehicle as recited in claim 17.

At the outset, Applicants note that the Examiner did not point with particularity to any portion of Aoki '152 or Taga '801 as being a threshold value, an adjustment value, a charge torque modifier value, or a target torque level as recited in claim 17. Rather, the Examiner generically referenced multiple paragraphs of Aoki '152 and its figures without identifying specific claim elements. These omissions leave questions as to how limitations in the claims correspond to features in the prior art. Applicants therefore invoke the requirements of MPEP §1207.02, which requires that the Examiner's Answer point out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon in the rejection.

In the Office Action, the Examiner referenced the arguments for claims1- 8 and 13 (see Office Action, page 6). Applicants therefore state that the arguments presented with respect to claims 1-8 and 13 are also applicable to any identical limitations in claim 17.

In addition, claim 17 contains many limitations that are not recited in claims 1-8 and 13. For example, Aoki '152 and Taga '801 do not disclose or suggest that "when the state of charge exceeds a threshold value the target torque level decreases linearly as the output torque

of the primary power source increases to provide a consistent level of vehicle acceleration as the accelerator pedal is actuated." In the Office Action, the Examiner looked to column 1, line 51 through column 2, line 63 of Aoki '152 as the sole basis of support (see Office Action, page 6). To summarize, the cited passage merely states that engine torque is adjusted and reduced when necessary so excess engine torque is not transmitted to a drive wheel. There is absolutely no suggestion or disclosure of any relationship to charging of a power source, a state of charge, an accelerator pedal, or a consistent level of vehicle acceleration as the accelerator pedal is actuated as recited in claim 17.

Aoki '152 and Taga '152 also do not disclose or suggest any linear decrease in a target torque level when a state of charge exceeds a threshold value. Aoki '152 merely states that "the engine control processing mechanism sets the limited engine target torque TEη* as the engine target torque TE* and drive the engine 11" (see column 30, lines 7-9). In other words, Aoki '152 discloses calculation of a limited engine target torque value, which is not a target torque level "for an electrical machine" as recited in claim 17. Indeed, there is no disclosure or suggestion in Aoki '152 of any linear decrease a target torque level of an electrical machine, let alone one based on comparison of a state of charge to a threshold value or as output torque of a primary power source increases. Taga '801 does not cure the deficiencies of Aoki '152 and was not referenced by the Examiner with respect to this claim limitation.

For these reasons, a *prima facie* case has not been established for the rejection of claim 17 and this rejection must be withdrawn. Since claims 18-20 depend on claim 17, the rejection of these claims must be withdrawn for the same reasons.

1. Claim 2 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 2. Claim 2 recites that "the step of determining the maximum output torque level further includes

determining whether the primary power source is providing output torque." Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest the limitations of claim 2. As previously discussed, Aoki '152 does not disclose or suggest a maximum output torque level of a primary power source (see page 8 above). Therefore, it cannot logically disclose or suggest additional limitations associated with determining a maximum output torque level. Moreover, the passage cited by the Examiner (column 10, line 60 to column 11, line 53) discloses "driver motor maximum torque TMmax" which relates to drive motor 25, and not a primary power source (see column 10, lines 60-63). Applicants further note that drive motor 25 cannot properly be considered a power source since it does not drive an electrical machine in accordance with the preamble of claim 1. Taga '801 does not cure the deficiencies of Aoki '152 and was not cited by the Examiner with respect to the specific limitations of this claim. For these reasons, a *prima facie* case has not been established and this rejection must be withdrawn.

2. Claim 3 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 3. Claim 3 recites that "the step of determining the charge torque modifier value further comprises comparing a state of charge of the secondary power source to a threshold value and selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value."

The Examiner did not point with particularity to any portion of Aoki '152 or Taga '801 as being a first adjustment value, a second adjustment value, or a threshold value. These omissions leave questions as to how limitations in the claims correspond to features in the prior art. Applicants therefore invoke the requirements of MPEP §1207.02, which requires that the Examiner's Answer point out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon in the rejection.

Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest the limitations of claim 3. For example, Aoki '152 and Taga '801 are silent regarding first and second adjustment values or any values that are selected based on comparison of state of charge and threshold values. Indeed, nothing in the passages cited by the Examiner (column 11, lines 15-64 and Figure 7 of Aoki '152) remotely suggests these claim limitations. Taga '801 does not cure the deficiencies of Aoki '152 and was not cited by the Examiner with respect to the specific limitations of this claim. Accordingly, the rejection of claim 3 must be withdrawn.

3. Claim 4 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 4. Claim 4 recites that "the first adjustment value is greater than the second adjustment value." As discussed in the previous section, the Examiner did not point with particularity to a first adjustment value or a second adjustment value in Aoki '152 or Taga '801. Moreover, Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest a first adjustment value that is greater than the second adjustment value. The passages of Aoki '152 cited by the Examiner (column 29, lines 3-14 and column 11, lines 15-64) do not remotely disclose or suggest these limitations. Furthermore, the Examiner's conclusory statement that "there are multiple adjustment values dealing wherein as the SOC becomes, less, the charge/discharge requirement ... becomes greater" without any examples or support in the prior artis insufficient to establish a proper rejection (see Office Action, page 4). It is unclear what constitutes these "multiple adjustment values" since they have not been defined or pointed to in Aoki '152 by the Examiner. Moreover, the mere possibility that some value may exist is an improper basis for establishing a rejection based on obviousness. Taga '801 does not cure the deficiencies of Aoki '152 and was not cited by the Examiner with respect to the specific limitations of this claim. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

4. Claim 5 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 5. Claim 5 recites that "the first adjustment value is a constant based on the maximum output torque level." Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest a first adjustment value that is a constant based on the maximum output torque level. As previously discussed, the Examiner did not point with particularity to any element of Aoki '152 as being a first adjustment value. Moreover, the passages in Aoki '152 cited by the Examiner do not disclose or suggest any adjustment value that is based on a maximum output torque level of a primary power source, let alone an adjustment value that is also a constant. Taga '801 does not cure the deficiencies of Aoki '152 and was not cited by the Examiner with respect to the specific limitations of this claim. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

5. Claim 6 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 6. Claim 6 recites that "the second adjustment value is based on the maximum output torque level and the state of charge." Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest a second adjustment value that is based on the maximum output torque level and the state of charge. As previously discussed, the Examiner did not point with particularity to any element of Aoki '152 or Taga '801 as being a second adjustment value. Moreover, Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest any value that is based on a maximum output torque level of a primary power source and a state of charge. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

6. Claim 7 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 7. Claim 7 recites that "the second adjustment value decreases linearly as the state of charge increases." Aoki '152 and Taga '801, either alone or in combination, do not recite a second adjustment value that decreases linearly as the state of charge increases. As previously discussed, the Examiner did not point with particularity to any element of Aoki '152 or Taga '801 as being a second adjustment value. Moreover, Aoki '152 and Taga '801 are silent regarding any value that decreases linearly as the state of charge increases. Furthermore, there is no support for the Examiner's contention on page 5 of the Office Action that the "linear" term is disclosed since Aoki '152 does not disclose or suggest any adjustment value, let alone any manner in which an adjustment value changes. Taga '801 does not cure the deficiencies of Aoki '152 and was not cited by the Examiner with respect to the specific limitations of this claim. For these reasons, a *prima facie* case has not been established and this rejection must be withdrawn.

7. Claim 15 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 15. Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest a charge torque modifier value. In addition, Aoki '152 and Taga '801 do not disclose or suggest the expression recited in claim 15. Moreover, the figures and passages cited by the Examiner simply do not disclose or suggest any portion of the expression of claim 15. A *prima facie* case has not been established and the rejection of this claim must be withdrawn.

8. Claims 18 and 19 Are Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 18 and 19. In the Office Action, the Examiner referenced the rejections of claims 3-6 to support the rejection of these claims (see Office Action, page 6). The limitations of claims 3-6 are not identical to claims 18 and 19. For example, claim 18 recites a "charge torque modifier value" while claim 4 recites "a first adjustment value" and claim 19 recites "selecting an adjustment value" while claim 3 recites "determining a charge torque modifier value." The Examiner has admitted that claims 3-6 are not identical to claims 18 and 19 (see Office Action, page 10) but has arbitrarily ignored these differences by improperly stating that supposedly similar subject matter is all that is needed to make a rejection (see Office Action, page 10 - "although the language presented is not identical to the previous claims rejected, the subject matter is"). "Similar subject matter" is not the legal standard for a proper obviousness rejection. Moreover, no other claim recites that the "step of selecting an adjustment value further comprises selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value" as recited in claim 19. Therefore, the Examiner's reference to other claims fails to address each and every element of claim 19.

Applicants also note that the Examiner has not pointed with particularity to any portion of Aoki '152 or Taga '801 to support the rejection of these claims. Instead, the Examiner ambiguously referenced "the citations provided in previous rejections of the related claims" (see Office Action, page 10). Frankly, Applicants do not know what is considered a "related claim" or which of the approximately 40 passages and Figures cited in the Office Action the Examiner is attempting to reference. Applicants therefore invoke the requirements of MPEP §1207.02, which requires that the Examiner's Answer point out where all of the specific limitations recited in the rejected claims are found in the prior art relied upon in the rejection. In any event, Applicants believe that Aoki '152 and Taga '801 simply does not disclose or suggest the limitations of claim 18 and 19.

9. Claim 20 Is Separately Patentable Under 35 U.S.C. § 103(a) Over U.S. Patent No. 6,960,152 In View Of U.S. Patent No. 5,873,801

A *prima facie* case has not been established for the rejection of claim 20. Claim 20 recites that "the first adjustment value is greater than the second adjustment value." Aoki '152 and Taga '801, either alone or in combination, do not disclose or suggest a first adjustment value that is greater than the second adjustment value. Moreover, the passages in Aoki '152 cited by the Examiner do not remotely disclose or suggest these limitations. Taga '801 does not cure the deficiencies of Aoki '152 and was not cited by the Examiner with respect to the specific limitations of this claim. Thus, a *prima facie* case has not been established and this rejection must be withdrawn.

CONCLUSION

The cited references do not disclose or suggest all the limitations recited in claims 1-20. Therefore, the rejection of these claims must be reversed.

The appeal brief fee due in connection with this filing is $30, which is the difference between the current appeal brief fee of $540 under the provisions of 37 C.F.R. § 41.20(b)(2) and the first appeal brief fee of $510 previously paid on February 5, 2008. (Applicants note that a refund has been requested for the second appeal brief fee of $510 previously paid on August 21, 2008.) Please deduct $30 from Ford Global Technologies LLC, Deposit Account No. 06-1510. Please charge any additional fees or credit any overpayment in connection with this filing to Ford Global Technologies LLC, Deposit Account No. 06-1510.

Respectfully submitted,

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Enclosure - Appendices

VIII. CLAIMS APPENDIX

1. A method of controlling charging of a power source of a hybrid vehicle, the hybrid vehicle comprising a set of power sources including a primary power source and at least one secondary power source, and an electrical machine adapted to be driven by at least one member of the set of power sources, the method comprising:

determining a maximum output torque level of the primary power source;

determining a state of charge of the secondary power source;

determining a charge torque modifier value based on the maximum output torque level and the state of charge;

determining a target torque level for the electrical machine based on the charge torque modifier value; and

driving the electrical machine at the target torque level with the primary power source to charge the secondary power source.

2. The method of claim 1 wherein the step of determining the maximum output torque level further includes determining whether the primary power source is providing output torque.

3. The method of claim 1 wherein the step of determining the charge torque modifier value further comprises comparing a state of charge of the secondary power source to a threshold value and selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value.

4. The method of claim 3 wherein the first adjustment value is greater than the second adjustment value.

5. The method of claim 3 wherein the first adjustment value is a constant based on the maximum output torque level.

6. The method of claim 3 wherein the second adjustment value is based on the maximum output torque level and the state of charge.

7. The method of claim 3 wherein the second adjustment value decreases linearly as the state of charge increases.

8. The method of claim 3 wherein the step of determining a charge torque modifier value is based on the state of charge and an actual output torque of the primary power source expressed as a percentage of the maximum output torque level.

9. The method of claim 1 wherein the primary power source is an internal combustion engine.

10. The method of claim 1 wherein the at least one secondary power source is a battery.

11. The method of claim 1 wherein the electrical machine is a starter-alternator.

12. The method of claim 1 wherein the electrical machine is a motor-generator.

13. A method for controlling charging of a power source of a hybrid electric vehicle, the hybrid electric vehicle including the power source, an engine, and an electrical machine selectively coupled to the engine and adapted to charge the power source, the method comprising:

determining whether the engine is running;

determining whether the electrical machine is being driven by the engine and is charging the power source;

determining a maximum output torque level of the engine;

comparing a state of charge of the power source to a threshold value;

selecting an adjustment value based on an amount of torque available to charge the power source;

calculating a charge torque modifier value based on the adjustment value;

determining a target torque level for the electrical machine based on the charge torque modifier value; and

driving the electrical machine at the target torque level with the engine to charge the power source;

wherein the charge torque modifier value is a constant if the state of charge is less than the threshold value and the charge torque modifier value decreases as the state of charge increases if the state of charge is greater than the threshold value.

14. The method of claim 13 wherein the charge torque modifier decreases linearly as the state of charge increases if the state of charge is greater than the threshold value.

15. The method of claim 13 wherein the charge torque modifier value is determined as a function of the expression:

$Torque_{Max\%}$ * Adjust

where:

$Torque_{Max\%}$ is the maximum output torque level of the engine expressed as a percentage, and

Adjust is the adjustment value selected.

16. The method of claim 15 wherein the maximum output torque level of the engine expressed as a percentage ($Torque_{Max\%}$) is determined as a function of the expression:

($Torque_{Max}$ - $Torque_{Actual}$) / $Torque_{Max}$

where:

$Torque_{Max}$ is the maximum output torque level of the engine, and

$Torque_{Actual}$ is the current output torque of the engine.

17. A method of controlling charging of a power source of a hybrid electric vehicle, the hybrid electric vehicle comprising a primary power source, a secondary power source, an electrical machine adapted to be driven by the primary or secondary power sources, and an accelerator pedal, the method comprising:

determining a maximum output torque level of the primary power source;

determining a state of charge of the secondary power source;

comparing the state of charge to a threshold value;

selecting an adjustment value;

determining a charge torque modifier value based on the adjustment value and an actual output torque of the primary power source expressed as a percentage of the maximum output torque level;

determining a target torque level for the electrical machine based on the charge torque modifier value; and

driving the electrical machine at the target torque level with the primary power source to charge the secondary power source;

wherein when the state of charge exceeds a threshold value the target torque level decreases linearly as the output torque of the primary power source increases to provide a consistent level of vehicle acceleration as the accelerator pedal is actuated.

18. The method of claim 17 wherein the charge torque modifier value is a constant if the state of charge is less than the threshold value.

19. The method of claim 17 wherein the step of selecting an adjustment value further comprises selecting a first adjustment value if the state of charge is less than the threshold value and selecting a second adjustment value if the state of charge is not less than the threshold value.

20. The method of claim 19 wherein the first adjustment value is greater than the second adjustment value.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None